

**ABSTRACT OF THE DISCLOSURE**

A method of bleaching chemical cellulose pulp from an alkaline (e.g. kraft) pulping process in a chlorine dioxide stage includes (without between step washing) bleaching the pulp in a first chlorine dioxide step, and adjusting the pH of the pulp in the first chlorine dioxide step so that the final pH of the step is over 4; and then (b) effecting acid treatment of the chemical cellulose pulp at a pH of between 2-5 (preferably 2.5-4) and a temperature of over 80°C (preferably between about 90-110°C). The temperature in the first chlorine dioxide stage is preferably over 75°C, e.g. between about 80-100°C, and for a time of less than ten minutes, with a chlorine dioxide dosage of between about 0.5-1.5% active chlorine. Preferably a second chlorine dioxide step is practiced after the acid treatment, preferably at substantially the same conditions as the first chlorine dioxide step. The method minimizes the consumption of chlorine dioxide to bleach to a particular kappa number, minimizes the amount of equipment, enhances energy economy of the chlorine dioxide bleaching process, and minimizes the discharge of malodorous gases since they are oxidized by the first chlorine dioxide step.